3.4

Explanation of Significant Differences

GE/Spokane Site
E. 4323 Mission Ave.
Spokane, WA

Washington Department of Ecology
Toxics Cleanup Program
Eastern Regional Office
Spokane, WA

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Introduction

This document is an explanation of significant differences (ESD) in cleanup actions for the GE/Spokane Site located at E. 4323 Mission Ave., Spokane, WA. (Figure 1). General Electric Company (GE) performed the cleanup action in accordance with the Model Toxics Control Act (MTCA), Ch. 70.105D RCW. Cleanup actions for soil at the site are largely complete, but significant differences between the planned and executed cleanup actions require documentation.

This ESD documents changes to the final design (Bechtel, 1996) and cleanup action plan (Ecology, 1997), in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) section 117(b) and the National Contingency Plan (NCP) 40 CFR Parts 300.435(c)(2) and 300.825(b) and (c), as well as with the requirements of the MTCA Cleanup Regulation (Ch. 173-340 WAC). Applicable guidance for this ESD is provided by Kmet (1992) and EPA (1991).

Background

The 1993 Cleanup Action Plan for the site was amended, and finalized after public notice and opportunity to comment February 7, 1997. That amendment required soils within 15 feet of the surface elevation of the site containing greater than 10 mg/kg total PCB, and soils below 15 feet of the surface elevation of the site containing greater than 65 mg/kg total PCBs, to be excavated, screened for volume reduction, and transported off-site for disposal at a TSCA permitted facility. Approximately 10,000 cubic yards of soil were estimated to require excavation, treatment, and disposal (Table 1).

Significantly greater amounts of contaminated soil were encountered during excavation. Ultimately, 22,000 cubic yards of material were excavated. In the end, some soils were left in place containing chemicals above 1993 cleanup levels. On properties not owned by GE, these soils were at depth, and capped with geosynthetic liner material. On GE-owned property, about 9000 cubic yards were removed, and remaining PCB-bearing soils were left in place and capped with asphalt paving.

This containment is a significant change to the Remedial Design documents, and a change of remedy for a portion of the site from the Cleanup Action Plan (CAP), prepared by Ecology and finalized March 29, 1993. Therefore, this ESD constitutes an amendment of the Final Cleanup Action Plan, and is meant as an exhibit to an amendment of Consent Decree 93206059-3 between the State of Washington and GE. Public participation will be conducted in accordance with WAC 173-340-600(9) and (11).

Declaration

Ecology has selected this remedy because it will be protective of human health and the environment. Furthermore, the selected remedy is consistent with the preference of the State of Washington as stated in RCW 70.105D.030(1)(b) for permanent solutions.

Applicability

This ESD is applicable only to the GE Spokane Site. These cleanup actions have been developed as an overall remediation process being conducted under Ecology oversight using MTCA authority, and should not be considered as setting precedents for other sites.

Administrative Record

The documents used to make the decisions discussed in this cleanup action plan amendment are constituents of the administrative record for the site. The administrative record for the site is available for public review at the information repository for the site. The information repository is located at Ecology's Eastern Regional Office, N. 4601 Monroe, Spokane, WA 99205-1295.

General Background and MTCA Process

The GE/Spokane site was listed on the CERCLA National Priorities List (the "Superfund" list) by the U.S. Environmental Protection Agency in 1988. Ecology was established as the lead agency for oversight of the cleanup through agreement with EPA. Remedial investigations, interim actions, a risk assessment, and a feasibility study were conducted under an agreed order with Ecology, pursuant to the Model Toxics Control Act (Ch. 70.105D RCW). Documents associated with these actions are part of the administrative record, available at Ecology's Eastern Regional Office in Spokane.

Site History

The GE/Spokane Site is located at E. 4323 Mission Avenue, in Spokane, WA. (Figure 1). The site history is fully documented in Bechtel, 1998. Briefly, the former transformer service shop had operated from 1961 to 1980. In the course of servicing transformers, oils containing PCBs were used. PCBs were banned in 1979 under the federal Toxic Substances Control Act. Following closure of the transformer shop, investigations found PCBs in ground water, surface soils, dry wells, and other drainage features (Figure 2).

GE demolished buildings and excavated most subsurface tanks and drainage structures as an interim action. Soils and debris generated were used to

construct a "test cell" to demonstrate the effectiveness of In-Situ Vitrification (ISV) in destroying PCBs to standards required under federal law and regulation.

The feasibility study (Bechtel, 1992) proposed using ISV to destroy PCBs in on-site soils prior to the demonstration test. The Cleanup Action Plan (CAP) for the site was written in early 1993 (Ecology, 1993), detailing Ecology's concurrence with GE that ISV should be performed. ISV was performed in 1994, and an EPA permit for that technology issued (EPA, 1995).

The Cleanup Action Plan was amended (Ecology, 1996) when it was determined that costs to vitrify all site soils were substantial and disproportionate to those for removal and off-site disposal. The Amended Cleanup Action Plan called for vitrification of soils bearing high concentrations of PCBs. Soils with low concentrations of PCBs, and total petroleum hydrocarbons above 200 mg/kg were to be excavated and transported for disposal to an appropriate facility.

Vitrification of soils bearing high concentrations of PCBs proceeded in 1996. Design documents for excavation were finalized in 1996, including the addendum to the Final Soil Treatment Design, Construction, and Operations Plan (FSTDCOP, Bechtel, 1996). This document predicted approximately 10,000 cubic yards of soils required removal sitewide, based on data from the various remedial investigation documents (Table 1).

Soil removal was conducted in 1997. A final Cleanup Action Report was filed in 1998, detailing site activities (Bechtel, 1998).

Significant Differences

Soil Removal

Figure 3 illustrates the area planned for soil removal in the FSTDCOP (Bechtel, 1996). Figure 4 illustrates the actual soils removed. Volumes removed are summarized in Table 1. Table 2 summarizes the treatments applied to soils managed on site. As noted in the Final Cleanup Action Report, the lateral and vertical extent, and thus volume, of PCB and TPH bearing soils was significantly greater than predicted.

Standards Achieved

The Amendment to the Cleanup Action Plan called for cleanup of soils to standards established under MTCA Method C for industrial soils (WAC 173-340-745) where institutional controls on land use were available. Soils where institutional controls were not acquirable, specifically the Riley Property (Figure 2) were required to meet residential standards.

Cleanup standards were established for the site in 1993. For PCBs, the cancer potency factor, or dose supplied to a receptor which results in carcinogenic effects, was 7.7 mg PCB per kg of receptor body weight per day. This value was consistent with the value published in the Integrated Risk Information System, a database of chemical toxicity values, which Ecology uses by rule to establish cleanup levels.

Application of this cancer potency factor led to cleanup levels being established for soils as follows: 10 mg/kg PCB for industrial area soils and 1 mg/kg for unrestricted land use soils where direct contact with humans is of concern (from surface to 15 feet deep); and 65 mg/kg in soils for protection of ground water quality (throughout the soil profile).

Cleanup levels for petroleum hydrocarbons were set at the Method A value for soils, 200 mg/kg.

Excavation at the site did not achieve these objectives at certain locations on site. PCB chemicals remain on site, chiefly on GE property, at levels above 10 mg/kg in surface soil. PCBs remain at depth above 65 mg/kg on one portion of the WWP property (Figure 5, Table 3).

TPH chemicals exceed 200 mg/kg at depth on the Riley property in two small occurrences, and at depth on portions of the GE and WWP properties (Figure 6).

Instead of excavation, these areas were capped. Extent of subsurface geosynthetic caps and paved surface soils are illustrated on Figure 7.

In summary, instead of excavating all soils above established cleanup levels, General Electric excavated most soils above cleanup levels, and contained remaining soils through capping and/or institutional controls. This containment minimizes human exposure to these chemicals.

Summary

GE removed significantly greater amounts of PCB contaminated soils than predicted by their design, based upon the requirements of the amended Cleanup Action Plan. GE did not remove all contaminated soils from the site. Approximately 2300 cubic yards of soils containing PCBs above 1993 cleanup levels remain on site (Table 3). General Electric has taken actions including capping, fencing, and institutional controls to restrict access to the site and limit human exposure to these chemicals.

Evaluation of Actions with Respect to MTCA Criteria

The following evaluates the remedy performed to the remedy selection criteria of WAC 173-340-360.

Protection of Human Health and the Environment

The major exposure routes from the site are from ingestion of or contact with PCB contaminated ground water and soil. Institutional controls restricting use of contaminated ground water provides long term protection of human health from ingestion of drinking water. Installation of caps and fences restricting access to the remaining contaminated soils provides long-term protection of human health and the environment from ingestion of contaminated soils.

Compliance with Cleanup Standards

The remedy performed leaves material above 1993 cleanup levels on site, thus it does not meet the 1993 cleanup standards. Soils on site above 1993 cleanup levels were contained by paving or covering, and have been fenced. These actions limit human exposure to these chemicals.

Since 1993, new information has been developed regarding toxicity and environmental fate of site chemicals of concern (USEPA, 1996; Ecology, 1997). Incorporation of this information would result in higher concentrations of both PCBs and TPH considered protective under the MTCA.

Ecology finds that chemicals remaining in site soils do not exceed concentration values based upon these new considerations of toxicity and environmental fate. Thus, though cleanup levels are not changed, the containment of soils bearing chemicals above 1993 cleanup levels is protective.

Compliance with Applicable Federal and State Laws

The cleanup action at the GE/Spokane site will comply with applicable federal and state laws. Local laws that are more stringent than the specified federal and state laws will govern when applicable.

Compliance Monitoring

Compliance monitoring consists of three categories: protection, performance, and confirmational monitoring (WAC 173-340-410). Protection monitoring confirms that human health and the environment are protected during construction, operation, and maintenance of the cleanup action. Performance monitoring confirms the cleanup action has attained cleanup standards and other performance based criteria. Confirmational monitoring confirms the long-term effectiveness of the cleanup action once cleanup standards are attained.

Protection monitoring and performance monitoring were conducted throughout the cleanup action (Bechtel, 1998). Ground water monitoring is ongoing.

Use of Permanent Solutions to the Maximum Extent Practicable

MTCA recognizes that permanent solutions may not be practicable for all sites. The cleanup action must satisfy the criteria outlined in WAC 173-340-360(5)(d) used to determine whether the cleanup is permanent to the maximum extent practicable. These criteria are discussed below.

Protection of Human Health and the Environment

The cleanup action is protective of human health and the environment. Substantial mass of PCB has been removed and the remainder is contained. Human access to chemical bearing soils and ground water are effectively eliminated. Performance monitoring is in place to evaluate the performance of those controls.

Long Term Effectiveness

The remaining hazardous substances present a significant risk reduction over previous conditions, and in-place controls will be effective in management of remaining materials.

Short Term Effectiveness

Containment of remaining material effectively reduces any residual risk of exposure via off-site transport of these substances.

Permanent Reduction of Toxicity, Mobility, and Volume

Significantly more PCBs were removed from the site than previously contemplated, reducing their mobility through disposal at a permitted facility. The volume of site PCBs has been substantially reduced. Mobility of remaining chemicals has been restricted through capping.

Implementability

The containment remedy has been implemented.

Cost

Containment of these remaining soils is substantially less than excavation, transport, and disposal.

Provide Reasonable Restoration Time Frame

The containment of these substances has already been accomplished. Further excavation, planning, and administrative steps could take years.

Public Participation and Community Acceptance

MTCA regulations require public concerns regarding this amendment be addressed. A public comment period for this document will allow the public and affected parties a chance to comment on the proposed action. Public comments and concerns will be evaluated, and Ecology will issue a finding indicating whether the Cleanup as performed is protective of human health and the environment. Ecology will specifically respond to all public comments.

Amendment of Cleanup Action Plan

The Cleanup Action Plan is amended to allow containment and institutional controls of PCB bearing soils remaining after excavation. The amendment is based upon implementation of those additional institutional controls. The amendment also acknowledges that 22,000, rather than 10,000 cubic yards of material, were removed from the site.

Remedial action to these levels is complete.

Affirmation of Statutory Determinations

Ecology has considered the new information that has been developed, the changes made to the selected remedy, and the volume and concentration of PCB bearing soils removed from the site. Ecology believes that the remedy remains protective of human health and the environment. Ecology believes this remedy complies with federal and state requirements that were identified in the original Cleanup Action Plan, and is cost effective. In addition, the revised remedy utilizes permanent solutions to the maximum extent practicable for this site.

References Cited

Bechtel, 1992, Feasibility Study Report for the Former General Electric Service Shop, Spokane, WA.

Bechtel, 1993, Summary Cleanup Action Planning Report, including the Soil Treatment, Ground Water Monitoring, Investigative and Project Waste Management, Compliance Monitoring, Data Management, and Health and Safety Plans, for GE-Spokane Remedial Design/Remedial Action Project

Bechtel, 1994b, Final Soil Treatment Design, Construction, and Operation Plan, GE-Spokane Remedial Design/Remedial Action Project

Bechtel, 1996, Addendum to the Final Soil Treatment Design, Construction, and Operation Plan, GE-Spokane Remedial Design/Remedial Action Project

Bechtel, 1998, Final Cleanup Action Report, GE-Spokane Remedial Design/Remedial Action Project

Ecology, 1993, Final Cleanup Action Plan, Former General Electric Spokane Shop, E. 4323 Mission Avenue, Spokane, WA

Ecology, 1996, Amendment to Cleanup Action Plan and Explanation of Significant Differences, GE/Spokane Site, Exhibit A to First Amendment to Consent Decree 93206059-3

Ecology, 1997, Interim Interpretive and Policy Statement, Cleanup of Total Petroleum Hydrocarbons (TPH): Ecology Publication No. ECY97-600

Ecology, Kmet, Peter to TCP Management Team, Nov. 23, 1992 memorandum, Guidance for Amending Cleanup Action Plans

U. S. EPA, 1991, Guide to Addressing Pre-ROD and Post-ROD Changes, USEPA OSWER Publication 9355-02FS-4

U.S. EPA, 1995, Approval to Dispose of Polychlorinated Biphenyls, issued to Geosafe Corporation, Oct. 31, 1995

U.S. EPA, 1996, PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures; National Center for Environmental Assessment, Office of Research and Development, EPA/600/P-96/001.

Table 1
Soil Volumes at GE/Spokane

Soil Source	Anticipated Volume in cubic yards (estimated from Bechtel, 1996)	Actual Excavated Volume (Bechtel, 1998)
Riley Property	1000	1676
WWP Property	4200	11,442
GE Property	3900	9055
Total	9100	22173

Table 2
Soils Treated at GE/Spokane
(Bechtel, 1998)

Treatment Method	Volume (cubic yards)
In-Situ Vitrification	1650
Subsurface Grouting in the West Dry Well	525
Off-Site Disposal	17871
Cobble and other soils backfilled on site	5970

Table 3
Soils Remaining Above 1993 PCB Cleanup Levels
(Bechtel, 1998)

Property Owner	Soil Volume Remaining (cubic yards)	Estimated PCB Concentration (mg/kg)
WWP	300	70
Riley	0	-
GE	2000	20.8

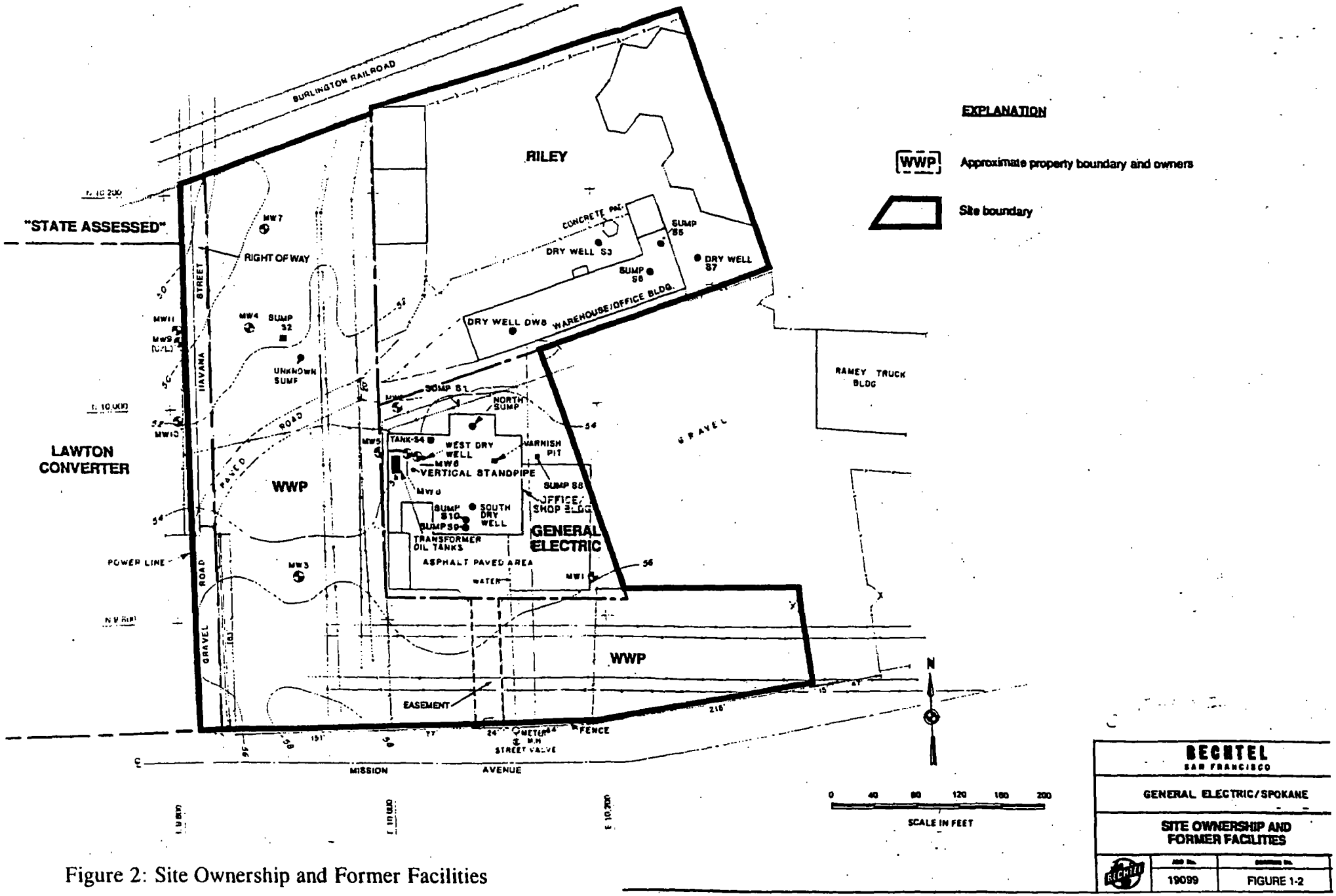

Figure 2: Site Ownership and Former Facilities

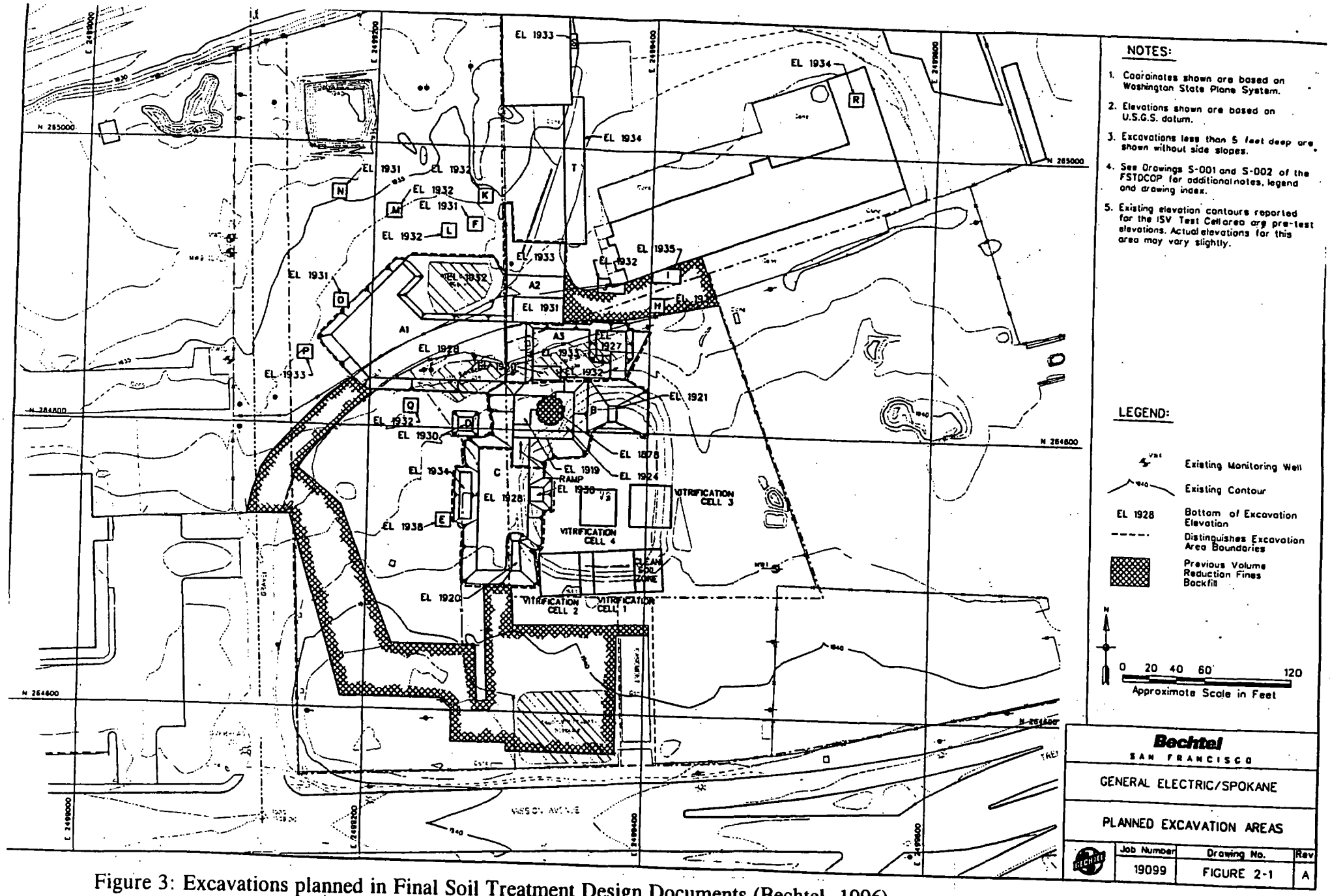

Figure 3: Excavations planned in Final Soil Treatment Design Documents (Bechtel, 1996)

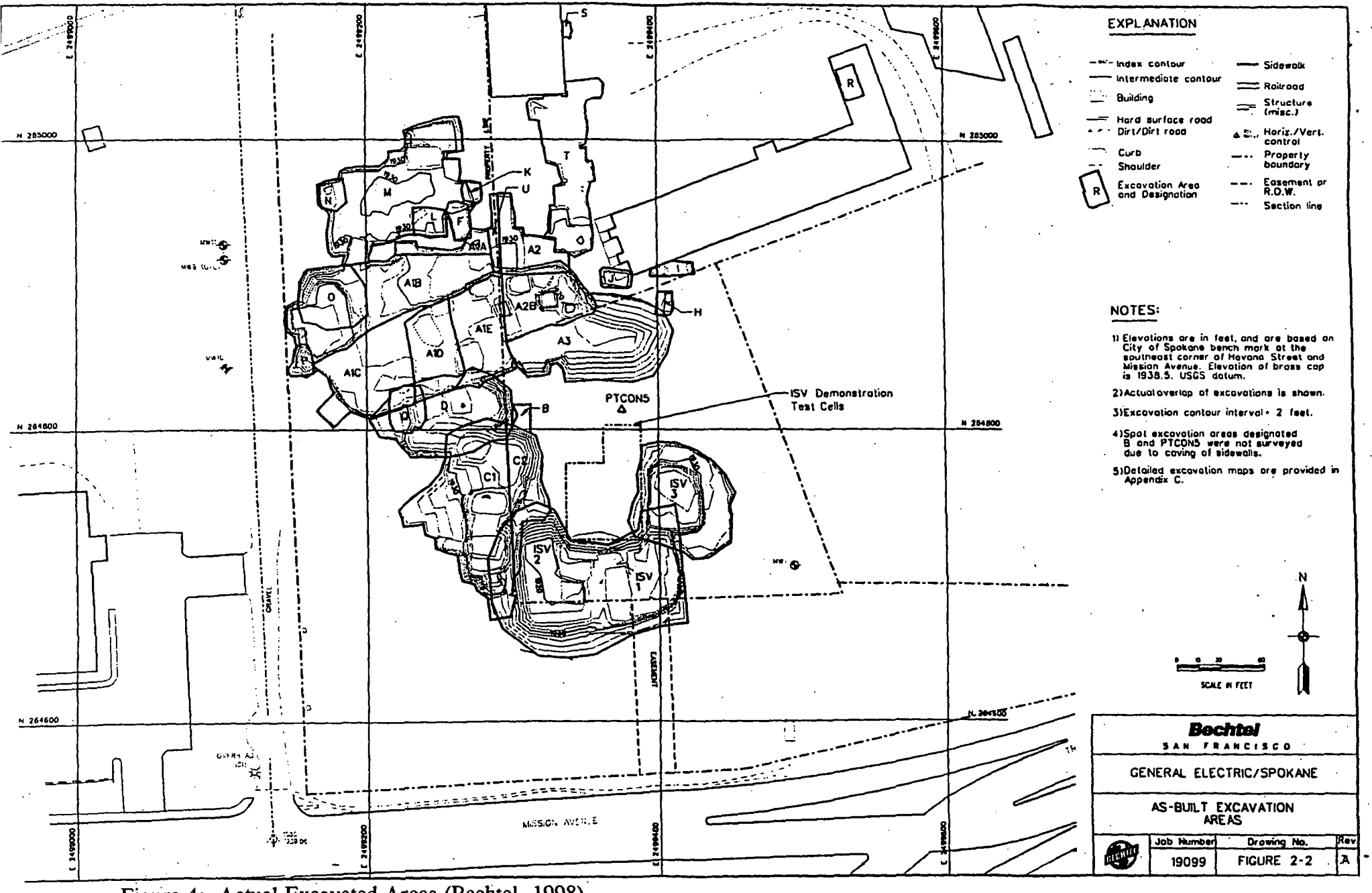

Figure 4: Actual Excavated Areas (Bechtel, 1998)

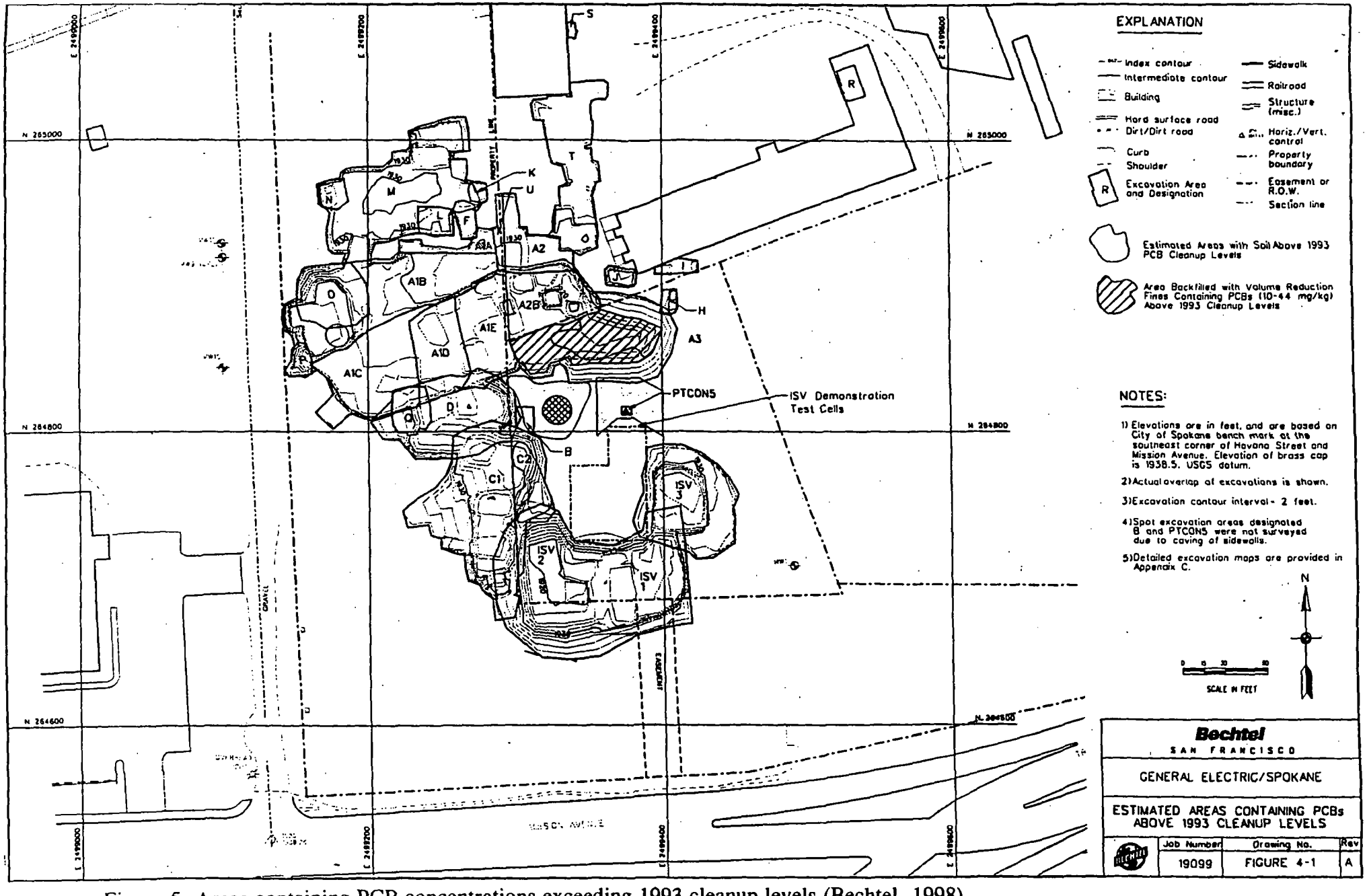

Figure 5: Areas containing PCB concentrations exceeding 1993 cleanup levels (Bechtel, 1998)

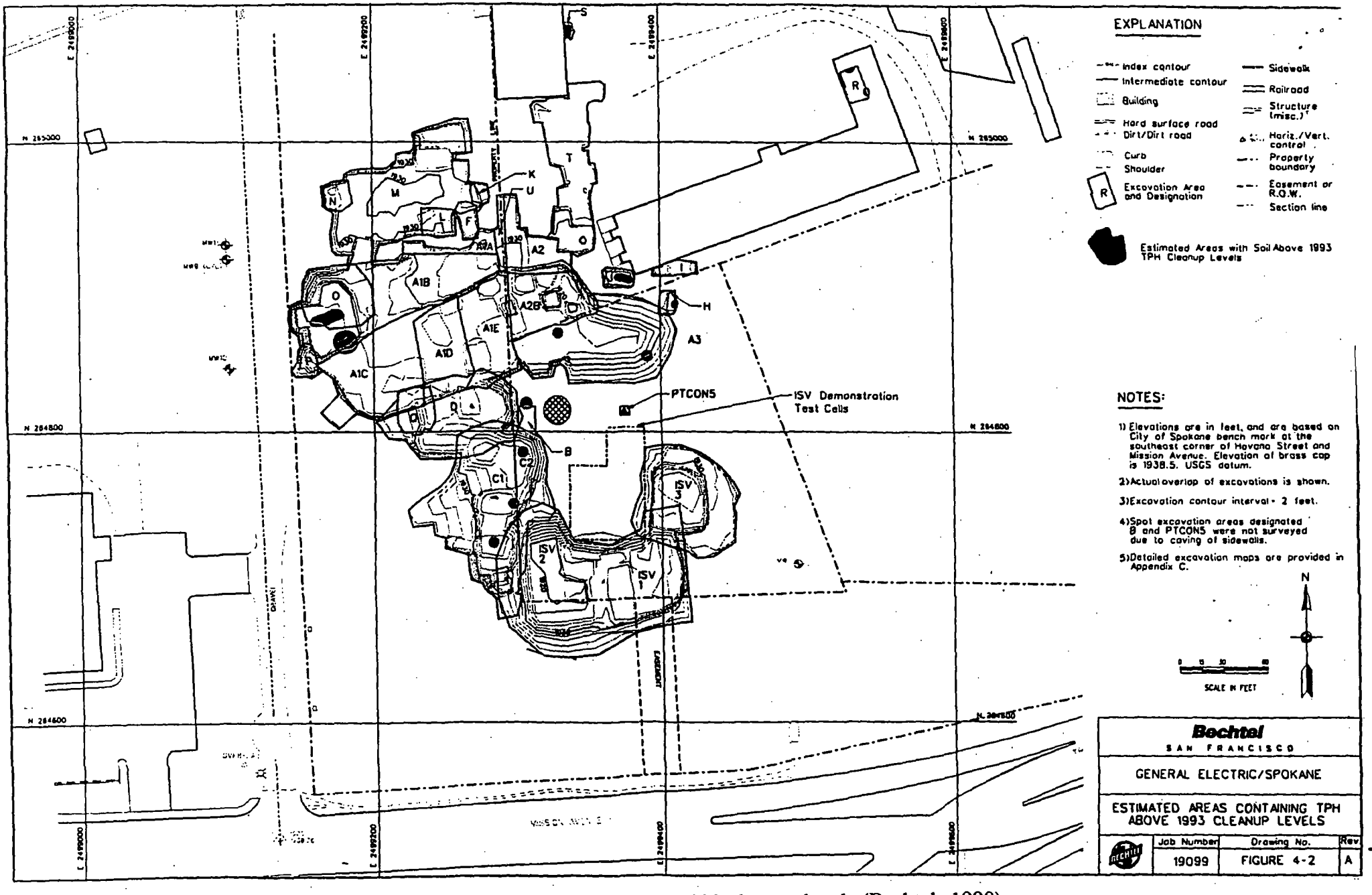

Figure 6: Areas containing Total Petroleum Hydrocarbons above 1993 cleanup levels (Bechtel, 1998)

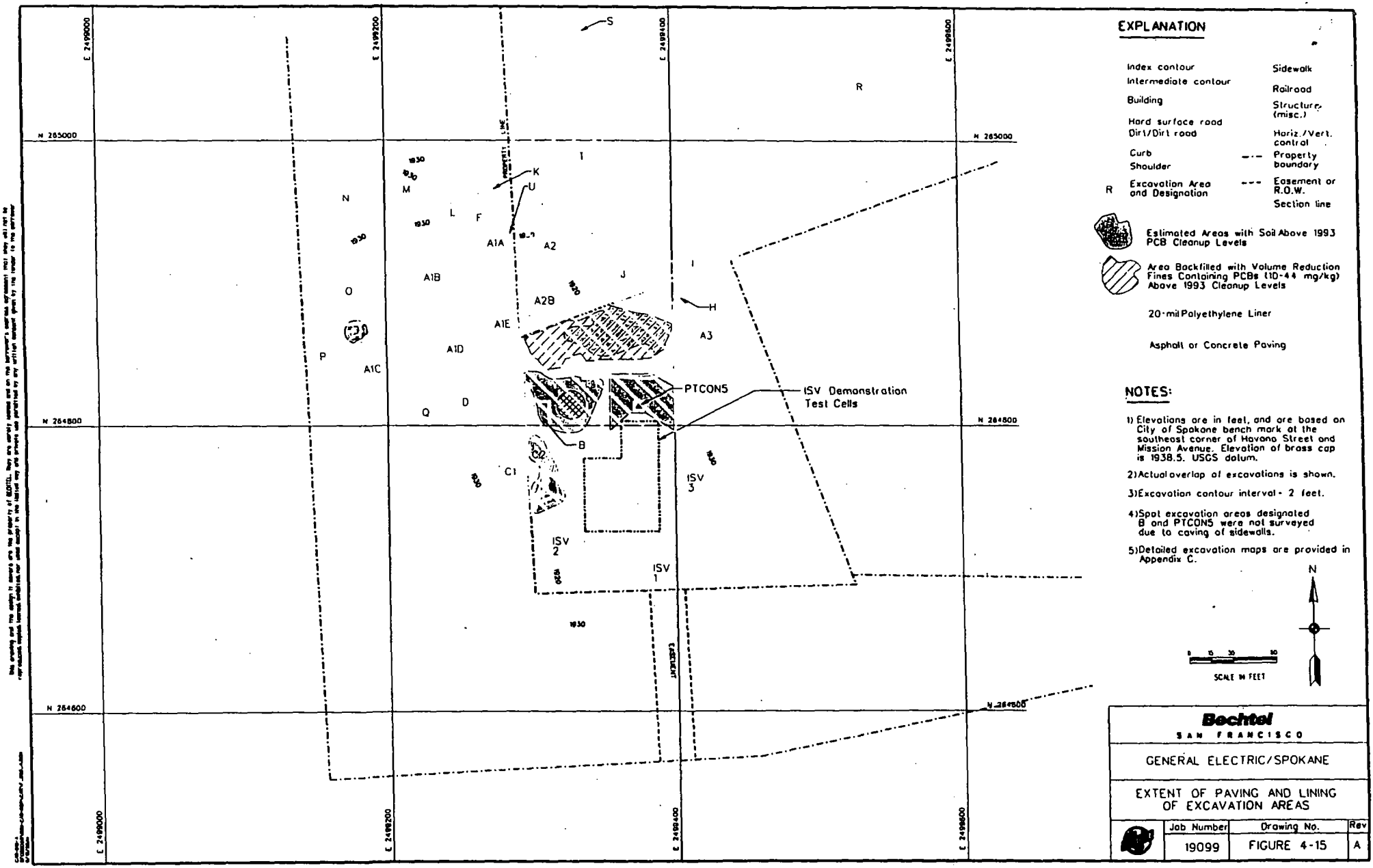

Figure 7: Extent of Paving, Lining, and Excavation Areas, and areas above 1993 cleanup levels (Bechtel, 1998)